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WHAT ARE THE DETERMINANTS OF FUEL SUBSIDIES IN ASIA-PACIFIC ECONOMIC COOPERATION COUNTRIES?

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Abstract

Fuel subsidies are widespread and debated extensively. The issues with these subsidies are fully acknowledged by many energy economists; however, the total subsidy level remains high. This is because energy subsidies are often closely related to the political economy viewpoint. Moreover, the rationale underlying fossil fuel subsidies, particularly concerning political, economic, and social contexts, is to reduce energy poverty, ensure access to energy, and redistribute the wealth that stems from the exploitation of national resources. Although there is considerable controversy surrounding the efficiency of these policies, energy subsidies confer private benefits on particular interest groups and, once implemented, tend to persist. This paper discusses and models various aspects of the political economy of fuel subsidy reform in selected Asia-Pacific Economic Cooperation (APEC) economies. Applying a panel data set from the period 1991–2018, the paper provides an empirical analysis of the economic and political perspectives of fuel prices in APEC countries resulting from the elimination of fossil fuel subsidization policies. Our findings robustly support the current economic trend of those governments that have decided to phase out fossil fuel energy policies. Based on these findings, we conclude that a range of economic, political, and social parameters systematically influence fuel prices.

Keywords: APEC, political economy, subsidies

JEL Classification: E61, Q43, Q48

Contents

1. INTRODUCTION

Energy subsidies are widely used (Commader 2012). The scarcity of energy resources has been fully reflected in the implementation of government policy changes in domestic energy prices (Hope and Singh 1995). This issue has proved controversial in several developing countries, such as Indonesia, Malaysia, Thailand, and Middle Eastern and North African countries. However, while there seems to be general agreement about the costs of subsidizing energy, there are differing views concerning the economic and welfare consequences that result from a change in relative fuel prices. This issue is particularly important in the current economic climate in which world growth has been weaker and slower than expected. For example, weak Chinese data continue to cause concern, and growth in Japan and the eurozone remains fragile at best (Deloitte 2019).

The prime objective of this policy is to protect the lowest-income households and foster domestic industrial growth. However, in most cases, a government's energy bill is enormous and deleterious; it strains a country's fiscal revenues, misallocates the distribution of income, and perpetuates damaging a large proportion of economic activity. Energy subsidies are a costly way of benefitting the poor, but from the governments' perspective, this assistance should be minimal. However, there has been much controversy about this unfavorable economic policy. The many contentious debates about both public agencies' budget balances and fairness are insufficient to enable these agents to implement this reform appropriately (Inchauste and Victor 2017).

These energy subsidization issues are widely acknowledged; however, the total subsidy level remains high. For instance, consumer subsidies accounted for 0.7% of the global gross domestic product (GDP) in 2013 (Coady et al. 2015). This is because energy subsidies are often closely related to the political economy.

The experience of this reform depends on many factors, such as the timing, communication strategy, and mitigating measurements. Many countries have begun to undergo major energy reforms to ensure that their governments' fiscal budgets are sustainable and accountable. Also, research of fuel subsidy reform in the context of the political social economy is imperative in the current oil-exporting countries. This study, therefore, aims to explore the political economy of energy reform in selected Asia–Pacific Economic Cooperation (APEC) economies.[1] The APEC countries selected for this study are Brunei Darussalam, Chile, the People's Republic of China (PRC), Indonesia, the Republic of Korea, Malaysia, Mexico, Peru, the Philippines, the Russian Federation, Thailand, and Viet Nam.

One of the motivations for analyzing the APEC economies is that this region has the highest world energy demand and includes four out of the world's five largest energy users (the PRC, Japan, the Russian Federation, and the United States). Additionally, this region contains some of the fastest-growing economies in the world as well as the major energy producers and consumers.

Our research aims to investigate the factors that can affect subsidy policy decision-making in the APEC region. In this paper, we focus on examining the factors that are most likely to have an impact on the removal of subsidy policies and determining why agents find it difficult to eliminate a policy once it is in place.

Van Beers and Strand (2013) stated that a nation with strong economic growth and high achievement of the GDP per capita can generate higher oil prices. In most cases, these

[1] APEC comprises 21 members.

higher-income countries will tend to have higher fuel prices. Thus, the rate of subsidies imposed by these governments is relatively low but taxes are considered relatively high. This is because the cost of oil prices in these countries includes refining, transportation, and distribution costs. The variation in these costs will certainly affect the overall retail oil prices in these countries.

This study is particularly relevant concerning the last two years because of the sharp decline in world oil prices. The low oil prices have created an opportunity for policymakers to implement such reform to enhance governments' fiscal position (Inchauste and Victor 2017). Reform is urgently needed to prevent countries' economies from further distorting the local energy prices and government expenditures. Besides, this paper aims to revisit the political-economic doctrine of this region. It also provides a comprehensive policy implication to help these governments achieve their commitment to phasing out inefficient fossil fuel subsidies.

Another major contribution that this paper makes is adopting an empirical approach to investigate the political factors that can exert an impact on fuel subsidy policies, which many previous studies have found difficult to support (Anderson 1995; Alderman 2002; Sovacool 2017). Also, the variables applied in this study contain some hidden factors concerning the fuel prices that several APEC governments are tentatively subsidizing. Therefore, applying institutional capacities, such as control of corruption, GDP, government effectiveness, and political stability, can explain governments' decisions to remove fuel subsidy policies when applying domestic oil prices. This approach has also been used in other literature to address the elements absent from fuel subsidy policies (Joseph 2010; Kotsogiannis and Rizzo 2016).

Numerous energy policy studies have asserted that governments should implement subsidies only when they are essential, for example in the case of research support for new technologies; the remainder should be dismantled (International Energy Agency 2008; Victor 2009). Following this initiative, the research goal of this study is to focus in-depth on a political perspective and provide policymakers with a rich source of political-economic background about the economic situation that enables the policy reform to be implemented effectively and efficiently.

Incorporating such political factors in the fossil fuel subsidization reform is highly complex and problematic. Many policy makers find it extremely difficult to remove an energy subsidy policy. This paper, therefore, aims to revisit the issue of political factors in energy reform; helping political leaders or interest groups resolve policy failure is as important as their decision to eliminate an energy subsidy.

This study proceeds as follows. Section 2 discusses the current development in fossil fuel subsidy reforms in selected APEC economies. A discussion on the data sources and methodology used in this study is provided in Section 3. Section 4 presents an analysis of the empirical results. Conclusions and policy implications are presented in Section 5.

2. OVERVIEW OF THE RECENT FOSSIL FUEL SUBSIDY REFORM AND THE POLITICAL ECONOMY PERSPECTIVE IN APEC ECONOMIES

APEC is a regional economic forum that was established in 1989. The objective of APEC is to support and sustain the economic growth of Asia and the Pacific economies. This forum has 21 member countries and is a key player in the world economic and energy landscape. Accounting for about 60% of the world's energy demand in 2014, the APEC

region includes four of the world's five largest energy users: the PRC, the United States, the Russian Federation, and Japan. The APEC member countries are also the world's largest energy producers and consumers (APEC 2017). Table 1 presents the key energy indicators in this region.

Table 1: Key Energy Outlook in the APEC Region

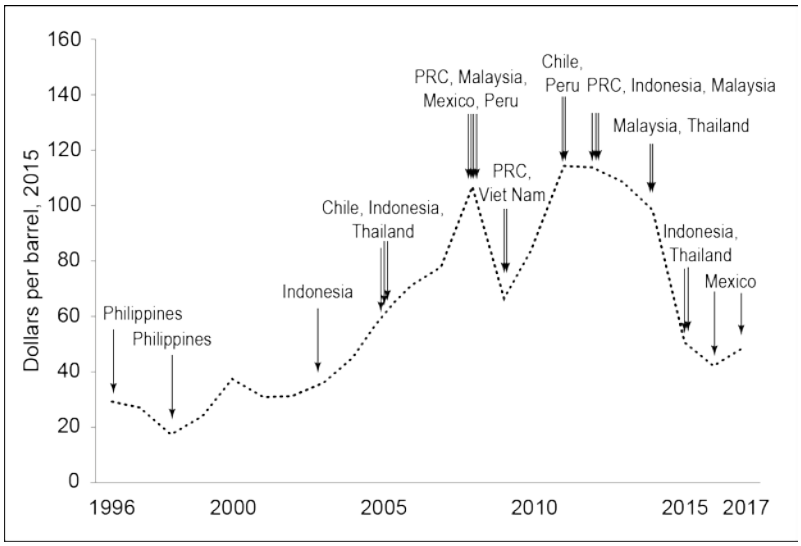
	Unit	1990	2000	2014	2000–2014*
GDP (MER)	USD 2015 billion	18,755	26,183	41,499	3.3%
GDP (PPP)	USD2015 billion	24,310	33,652	58,643	4.0%
Population	Millions	2,301	2,569	2,841	0.7%
energy demand (share of global)	Mtoe	4,888 (56%)	5,688 (57%)	7,955 (58%)	2.4%
energy demand per capita (APEC)	Mtoe	2.12	2.21	2.80	1.7%
energy demand per capita (world)	Mtoe	1.66	1.64	1.89	1.0%
Energy intensity (APEC)	toe/USD 1,000	0.26	0.22	0.19	−0.9%
Energy intensity (world)	toe/USD 1,000	0.25	0.21	0.19	−0.7%
Net oil trade** (excluding RussiaN FEDERATION)	mb/d (mb/d)	−6.45 (−12.0)	−15.2 (−19.1)	−12.9 (−20.5)	−2.0% (0.9%)
Net gas trade** (excluding RussiaN FEDERATION)	bcm (bcm)	189 (7)	125 (−60)	23 (−154)	−18.8% (12.6%)
Energy-related CO_2 emissions (share of global)	Mt	11,688 (57%)	13,730 (60%)	20,111 (63%)	2.8%

Source: International Energy Agency (2017).

The energy demand in the APEC region has increased substantially. It is estimated that the energy consumption in this region accounted for around 40% of the worldwide total between 2000 and 2014, due to the rapid economic growth and increasing population associated with rising per capita income (International Energy Agency 2017). Energy policy development, including that related to fossil fuel subsidies, has become a contentious issue in shaping the global energy trends.

Since 2014, the leaders of the APEC economies have renewed their commitment by considering the urgent need to implement subsidy reform. Several APEC countries have persistently attempted to abolish this policy gradually. The Philippines was the first nation in this economy to complete its oil subsidy policy removal, followed by a wave of reforms in other member countries, such as the PRC, Indonesia, Malaysia, and Mexico, resulting in rapid oil price declines. The calls for fossil fuel subsidy reform include the need for more transparency on fossil fuel subsidies (Gerasimchuk et al. 2017). Figure 1 shows the recent development of fuel subsidy reforms in the APEC economies, the process of which began since post the Asian currency crisis.

Figure 1: Fuel Subsidy Reform in Selected APEC Member Nations



Source: International Energy Agency (2017).

Energy subsidies are one of the most pervasive and controversial fiscal policy tools (El-Katiri and Fattouh 2015). These policies are widely perceived as providing major economic and social benefits for a country. Subsidies for energy consumption, which economists have widely discussed, are still a debatable topic regarding the effectiveness and fairness of this policy. Agents implementing the policy encounter considerable pressure on government finances and the undermining of fiscal sustainability (Inchauste and Victor 2017). However, discussion about this policy reform occurs for many reasons: for example, regarding strengthening the economy by increasing sectoral industrial growth as well as alleviating unemployment to avoid dissatisfaction among the general public (van Beers and Strand 2013).

Several studies have discussed fossil subsidy reform from various standpoints (Kojima 2012; Vagliasindi 2012a,b; Cottarelli et al. 2013; International Energy Agency 2014). A recent study by Vigliasindi (2012a) demonstrated that fuel subsidy rates are being reduced in some countries as a result of policy reform initiated by their governments. However, the pace of the overall restructuring of this policy is slow. This is because these subsidy reforms are extremely difficult to implement and put in place. The existence of fossil fuel subsidies raises a range of important economic and political issues that urgently need to be addressed. This study, therefore, aims to discuss how the overall effect of fuel subsidies influences economic performance. The impact on growth and development through energy subsidy reforms and the reasons why most governments still subsidize energy are important issues that need to be included and conveyed in this study.

Why is energy reform such a long and difficult task for policymakers? Inchauste and Victor (2017) believe that reformers, such as policymakers, take on a challenging task when altering energy subsidies because, once implemented, these subsidies tend to persist. They specify that three basic logics drive reform, which is important for reformers when altering an energy subsidy policy. The first is the nation's fiscal burden. The government, particularly once elected, manages subsidy costs as the main priority. This is because their constituents evaluate the government by considering, for the most part, the government's performance; these restructured bills can be very costly and not viable for a country's economic growth or its budget.

The second is the burden imposed on influential interest groups and stakeholders. These policies create a significant benefit for well-organized interest groups (such as the bulk distribution companies in Ghana). Additionally, they develop visible costs for organizing interest groups with special privileges to easily access liberating public funds using unconventional policy through the restructuring of the policy (Inchauste and Victor 2017).

The third is that the policies deliver an inefficient benefit to the poor. The study by Coady et al. (2015) showed that energy subsidies need to target low-income groups better; they are inefficient in benefiting the poor in many ways. Therefore, some countries with substantial energy subsidy costs have shifted to a more energy-efficient approach by improving how these subsidies are allocated.

Commander (2012) stated that various factors are important in explaining the government's institutional capacity for using energy subsidies in the APEC region. These include income buffering to prevent price volatility during a price shock, lobbying particular vested interest groups and allowing national patrimony to allocate government revenue flow from natural resources more unevenly among the population, and components of industrial policies aimed at supporting production. They also include reinforcing external competitiveness by supporting the export orientation of the economy and diversifying the energy supply by reducing the dependence on fossil fuel imports through subsidies.

Fuel subsidies are usually imposed when a government sets the petrol price below the market or international price. Several research papers have revealed that this behavior can induce overuse of energy in a country and undermine its overall output (Cornillie and Fankhauser 2004; Hang and Tu 2007). More generally, governments decide to resort to energy subsidies because they lack other effective avenues and the institutional capacity associated with the implementation of the policy. For example, many developing nations have limited their bureaucratic capacity and ability to monitor the policy, resulting in a relatively small proportion of fiscal revenues being raised from income and profit taxes.

A government's institutional capacity appears to be incorporated into the type of political system in a country.[2] The institutional quality and the political regime are interrelated. These factors are usually used to determine the competitiveness or democracy of a regime by implementing a better institutional policy. Indeed, governments with weak institutions, e.g., a large number of developing countries that lack a workable mechanism for dialogue and resolution, particularly non-democratic regimes, have tended to introduce or extend universal energy subsidies, sometimes irrespective of fiscal and other consequences. In general, policy decision-making appears to be problematic for governments when implementing energy reforms (Commander 2012).

There are both theoretical and practical reasons why autocracies experience difficulties in implementing reforms; energy reforms can be challenging and complex. As well as being extremely complex and involving many country-specific factors, some general features of these reforms stand out. These include loss of economic rents by the affected parties, such as companies, individuals, or households, as well as a political dimension. Politicians may be particularly affected by this reform simply because it may impact a recipient's ability to fund political parties, which, in turn, provides these autocracies with preferential treatment (Acemoglu and Robinson 2001). While energy reforms certainly involve considerable complexity, an appropriate focus for better policy institutions, such as effective communication, revenue redistribution measures, and further

[2] The institutional factors include bureaucratic quality, corruption, a lack of the rule of law, and democratic accountability.

complementary policies, is key in removing the constraints that affect how the key players interact and the associated outcomes.

3. DATA SOURCES AND EMPIRICAL METHODOLOGY

Various sources have been used to obtain the data in this study. Parameters such as bureaucratic quality, corruption, and democratic accountability were obtained from the *International Country Risk Guide* issued by the Political Risk Services group. Specific government sources in the APEC region and various websites were used to provide the country-specific panel data sets. The sample period for the panel data sets was from 1991 to 2018. Other than the *International Country Risk Guide* indicators, the World Bank and the International Monetary Fund were used to obtain economic indicators, such as the GDP, for each member country.

The analysis in this study was applied to selected APEC economies that have imposed fuel subsidies. These APEC member countries are Brunei Darussalam, Chile, the PRC, Indonesia, the Republic of Korea, Malaysia, Mexico, Peru, the Philippines, the Russian Federation, Thailand, and Viet Nam. These APEC nations are those that have subsidized at least one fuel product and have made progress in restructuring this policy in the last 20 years.

Following van Beers and Strand (2013) and Kolerus and Touna-Mama (2016), we developed the analytical framework for this study. We aimed to investigate how government institutions influence the fuel price-setting process or subsidies across the APEC economies. Accordingly, variables such as domestic fuel price, world oil price, governance (institutional and political variables, including government effectiveness, accountability, political stability, corruption, law and order, and regulatory quality), and respective countries' GDP figures were incorporated in the model. The basic equation takes the following form:

$$P_{it} = \alpha_{0t} + \alpha_1 WP_{it} + \beta_1' X_{it} + \beta_2' Gov_{it} + \varepsilon_{it} \quad (1)$$

where α_{0t} is a country fixed effect; P_{it} is the log of the domestic retail oil price of a country *i* in year *t*; WP_{it} is the log world price of fuel *j*; Gov_{it} is a set of indicators reflecting the institutional quality of the country's governance and, thus, the exposure or vulnerability to political pressures, including government effectiveness (GE), accountability (ACC), political stability (PS), corruption (CC), law and order (ROL), and regulatory quality (RQ); and X_{it} represents the set of macro policy control variables such as external debt (EXTDEBT) and GDP.[3] The error term is ε_{it}. Fuel prices and subsidies are correlated. [4] Therefore, the coefficient (α_1) in Equation (1) must be equal to 1.

We used the variable of retail gasoline price (P_{it}) as a dependent variable and truly believed that the retail gasoline price would be strongly correlated with GDP (X_{it}). Our research interest in this study was to develop a comprehensive and fundamental model that is appropriate to examine the benefit of the fossil fuel energy reform across two parties: (i) civilians and (ii) political leaders. This framework offers a strong and good starting point for political-economic analysis. We adopted a model using selected APEC economies to use in this research. We then investigated the proportion of energy subsidy

[3] The macro policy control reflects an exogenous fiscal policy stance and the proxy for monetary policy.

[4] In measuring fuel prices, Koplow (2009) stated that the price gap approach is appealing. This approach can deal with many complexities of energy policy interventions. This is because energy prices are a primary driver of economic behavior and changes in consumer prices.

that will be affected by these two parties as a result of the structural reforms of this policy. We have come to believe that this can contribute some beneficial values to help policymakers understand the benefits and costs across many diverse stakeholders; this is often essential for successful subsidy reform.[5]

As mentioned previously, the APEC economies are some of the most significant energy producers and consumers. Also, in recent years, there have been many signs of progress about energy subsidy reforms in these economies, but a lot of work is still required in this area. The elimination of fuel subsidies can lead to strong protest from the general public and the opposition parties. The reason is that it can affect disadvantaged income citizens when they receive their energy bills. Therefore, our paper aims to bridge the gap by focusing on policy-driven issues regarding subsidies and illuminating how the policy process can be influenced by political leaders in the country.

We ran regressions of the domestic retail price on the world fuel price, which are indicators of governance and fiscal and monetary policy variables. We then estimated Equation (1) with time and country fixed effects and robust standard errors clustered on the country level. The specification in Equation (1) includes an interaction term between the world price and each governance variable. These two variables (the world oil price and the individual governance variable) were used to test the relationship between these two parameters under different world price pressures. Equation (1) was also used to estimate a dummy for oil exporters incorporated into each governance variable, which could be used to test for the role of oil exporters.

In calibrating the data set, we first used ordinary least squares (OLS) to analyze the data, followed by country fixed-effect (FE) regression. The fuel product used in this study was the local gasoline with a retail price in US dollars. The data covered a broad range of APEC countries and included the Asian financial crisis, the oil price spike in 2008, and the subsequent decline during the global financial crisis. The purpose of including these periods was to allow for the isolation of the effect of governance on local retail fuel prices and thus on subsidization policies. Additionally, these periods involved substantial variation across Asia and the Pacific region over time. For instance, this substantial change included the upsurge of reforms as the world oil price spiked at the beginning of the millennium, with a severe shortfall of government revenues. Many APEC economies, including the PRC, Indonesia, Malaysia, and Mexico, had already started to reconsider eliminating energy subsidies on many fuel products, e.g., gasoline, diesel, and liquefied petroleum gas.

4. RESULTS AND DISCUSSION

Table 2 explains the outcome concerning the extent to which governance and consumer groups can affect fuel prices as a result of the decision to remove a fuel subsidization policy. The table presents both OLS and FE panel estimations and the regression of local retail fuel prices according to governance indicators and various controls. We conducted both OLS and FE regression analyses using 90, 95, and 99 % significance levels. The variance of these three significance levels did not show much change in the empirical outcomes. Therefore, we decided to apply the regression at a 95% significance level, which provided the most robust and convincing results in this study.

[5] Subsidies usually takes the form of price controls by many governments.

Table 2: Impact of Governance on Domestic Fuel Prices

	(1) OLS		(2) Fixed Effect	
wop	0.009**	13.99**	0.364**	12.41**
	(0.001)	(3.77E−35)	(0.030)	(5.77E−07)
GDP	−1.17E−06**	−0.31**	−4.42-E06**	−1.81**
	(3.73E−06)	(0.754)	(2.39E−06)	(0.072)
CC	0.117**	0.013**	0.122**	2.13**
	(0.047)	(2.49)	(0.057)	(0.034)
GE	−0.087**	−1.77**	−0.144**	−2.75**
	(0.049)	(0.077)	(0.052)	(0.006)
PS	−0.114**	−4.57**	−0.092**	−3.22**
	(0.025)	(6.81E−06)	(0.028)	(0.001)
RQ	−0.004**	−0.09**	0.042**	0.79**
	(0.048)	(0.927)	(0.054)	(0.433)
ROL	0.121**	2.53**	0.120**	2.22**
	(0.048)	(0.012)	(0.054)	(0.027)
ACC	0.094**	3.37**	0.099**	3.66**
	(0.028)	(0.001)	(0.027)	(0.0003)
Extdebt	−0.0001**	−0.65**	0.000**	0.26**
	(0.0002)	(0.515)	(0.0003)	(0.793)
Constant	0.320** (0.033)	9.67**	0.766**	25.45**
		(1.26E−19)	(0.03)	(6.30E−77)
Observations	336		336	
R-squared	0.548		0.698	
Number of clusters	28		28	

Note: Robust standard errors in parentheses. ** p < 0.05.

The findings of this research are in line with the outcome discussed by Kolerus and Touna-Mama (2016). They show that fluctuations in the domestic retail price are significantly correlated with the world oil price, good governance, political stability, control of corruption, and law and order. By contrast, a nation's income, such as GDP, external debt, government effectiveness, and regulatory quality are negatively correlated with the local domestic fuel price. This finding confirms that when the world oil price is plummeting, the decision to remove a fuel subsidization policy impacts the national income.

Our study shows that countries adopting good government institutions and transparent public policies tend to have higher domestic retail fuel prices. It shows that variables such as corruption control, government accountability, the rule of law, and world oil prices play a critical role in determining decisions regarding fuel subsidization policies and domestic retail prices. These four variables show p-value significance levels, and the results indicate that the transparency of institutional policies and governance can affect domestic fuel prices. In fact, due to the robustness of these variables in the model, we can state that these factors can influence the decisions made by government agencies before deciding to abolish a fossil fuel subsidization policy.

The empirical outcomes in this study also show their consistency with the current trend of the economic climate in which crude oil prices have now plummeted to USD23 per barrel. This is worth noting to explain a nation's external debt, GDP, and political stability, even though the outcomes show insignificance. The outcomes are appealing because our findings reveal that oil-exporting countries are facing challenging times. The majority of these countries are heavily dependent on their oil revenues, which have declined substantially. Indeed, lower pricing can lead to higher counterparty credit risk.

The governments that have decided to phase out subsidy policies will experience an extremely tough time economically, politically, and socially during any unprecedented periods (as with the COVID-19 pandemic and resultant global economic shutdown). Our study concludes that governments should review their subsidy policy at this critical time and ensure that this policy is applied by enhancing its specific objective of protecting vulnerable citizens. To a lesser extent, governments should be able to implement policies that are effective and cheaper for both the general public and several interest groups.

Fuel subsidization is the key policy implemented by government agencies to assist vulnerable groups. However, the reform of this policy remains politically controversial. Lockwood (2015) and Rentschler and Bazilian (2017) stated that reforms to remove subsidies for petrol and diesel are, to a certain extent, almost universally politically controversial, particularly in emerging economies such as Indonesia and Malaysia.[6] Fuel subsidy reform can be politically difficult. A reform undertaken without proper planning by government agencies can lead to violent street protests, either immediately or at a later date. To reiterate, this issue is a key objective for discussion in this study.

Nevertheless, political-economic challenges can create the most severe obstacles to transforming both producer and consumer fuel subsidies. Overall experience suggests that successful subsidy reforms in the past have been implemented under both high and low fuel prices. However, this implies that the current lower oil prices are conducive to, but not essential for, reform (Rentschler and Bazilian 2017). The outcome of this study suggests that institutional and governance factors are common political determinants for luring voters or influential interest groups, rather than being sound economic welfare factors for governments to assist the poor income groups.

Variables such as governance (Gov_{it}) and GDP are found to be negatively associated with fuel subsidies, but the parameter of corruption control can be positively correlated with fuel price.[7] Based on the data presented in Table 2, we can argue that the elimination of the fuel subsidization policy in APEC countries is solely dependent on the institutional capacity of the government. A rational, sound and effective institutional government policy can help determine what contributes to the public acceptance of reforms (e.g., advance publicity can be useful in preventing some interest groups from hiding their self-interested purpose, arguing that the reform creates hardship or uncertainty for a wider community). Similarly to the study by Alderman (2002), we argue that this is one of the useful strategies that need to be addressed in APEC countries. To varying degrees, the strategy has been implemented successfully in Bangladesh, Pakistan, and Zimbabwe (Alderman 2002).

[6] The fuel subsidy reform was implemented under the Barisan Nasional government in 2013. However, the newly elected Pakatan Harapan government intends to reintroduce this policy as one of its agenda items in its election campaign.

[7] Kotsogiannis and Rizzo (2016) stated that in a country with a relatively low level of corruption, the level of fuel subsidies can be reduced substantially because the corruption control has increased.

The findings of this study indicate that political perceptions about fuel subsidization policies can be complicated. The policies involve many economic, political, and social contexts. The contentious issues of political barriers in the APEC countries' fuel subsidy policies will continue; the journey towards the implementation of this reform cannot be straightforward. Time is needed to remove these barriers and prevent rent-seeking behavior by entrenched interest groups that only benefit from government fuel subsidization.

5. CONCLUSIONS AND POLICY IMPLICATIONS

This study addressed the contentious debate on the political issues that influence energy subsidy reform in selected APEC countries. It also incorporated some factors that can exert an impact on the decision to remove the fuel subsidy policy using the oil price. We used a panel data set from 1991 to 2018 in selected APEC economies to conduct both OLS and FE regression analyses. Regardless of the differences in the degree of democracy, the different levels of economic growth, the status as an importing or an exporting net oil country, or the differences in energy consumption among these countries, energy subsidy reforms and political perspectives are critical issues that affect the APEC economies.

The findings of this study are consistent with previous literature. They show that changes in domestic fuel prices can have a significant impact on a nation's income level and its institutional policy capacity. The empirical outcome of this research strongly supports the assertion that strong and effective governance, such as the ability to control corruption, government effectiveness, political stability, regulatory quality, law and order, and transparency, is the key point that determines the accomplishment of fuel subsidization policies. Nonetheless, this study bears some similarity to other previous research that indicates that a sound governance institutional policy is a key factor in oil and gas subsidy reform involving groups with different income levels.

This research is particularly important for APEC member countries that wish to implement a sound, effective, and convincing policy for their population that removes the fuel subsidy policy and benefits the population directly. However, the rationality of politicians convincing a community of the benefit of this policy remains doubtful, and it depends on the trust between politicians and the people. In this case, democracy plays a critical role and is the best strategy for eliminating a fuel subsidy policy.

Domestic energy pricing is inevitably political in many APEC countries and remains an important agenda for many governments. An example of this is the inability of the Malaysian Alliance of Hope (Pakatan Harapan) government to implement a better plan for fuel pricing reform. In large, emerging economies, such as the PRC and the Russian Federation, routes to reform are likely to be continued. The energy pricing reforms involve transforming political rents into forms that are more functional for changing the whole nature of emerging market economies. For energy policy reformers, a deep understanding of the nature of political rent and the strategy for managing it in these large, emerging economies are two of the challenging requirements for discovering those routes.

Many of our conclusions are novel, but much research needs to be conducted in the future, perhaps applying more sophisticated research techniques and/ updated data in this area. Our conclusions suggest that energy social welfare can be allocated equally and fairly through sound policy advice that has been discussed earlier in Section 2. Even though the data set we apply in this paper is readily available, our data still have limitations. One of these is that our gasoline data use US dollars. Using gasoline data in

the home country's denomination would generally offer more interesting empirical outcomes.

In our future research, we will conduct more sophisticated and robust analyses in this area. Many studies address the political issues in energy reform according to theoretical perspectives. Not much research has been conducted with an empirical approach using econometric models. Therefore, the researchers aim to conduct more conclusive and comprehensive research concerning energy price reform. Also, in the future, we intend to pursue empirical work where appropriate models and a comprehensive data set are used.

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